# Reprocessing CP:

## 1N:

#### Counter plan text: aff actors will keep the production of nuclear power with reprocessing plants and processes. Reprocessing is key to stop emissions and life saving medical tech – it solves the aff’s waste but natural disasters to existing waste mean they don’t, Andrew 8-23

August 23, 2016 Nuclear Waste: Human Danger or Hidden Opportunity By Lewis M. Andrews http://www.realclearenergy.org/articles/2016/08/23/nuclear\_waste\_human\_danger\_or\_hidden\_opportunity\_109230.html

While all this may sound a bit technical to the layperson, these **developments are** potentially **world changing,** for it turns out that what we commonly call **“nuclear waste” is not waste at all. Typical uranium reactors use less than 1% of their fuel, leaving the 99% in** temporary **storage** pools or dry **concrete containments** onsite. To get an idea of what recycling spent fuel could mean in terms of both cost savings and the reduction of atmospheric pollution, the **US currently has 70 thousand tons of so-called “waste,”** which converted into electricity at a consumer price of 15 cents per kilowatt hour, **would produce $110 trillion of non-carbon energy. That is a $2 million savings per resident**. University of Toronto Biophysics Professor Peter Ottensmeyer has calculated that “burning up” the spent fuel temporarily stored at US power plants in fast-neutron reactors would **avoid almost 640 billion tons of fossil fuel emissions – or 20% of all the CO2 now in the atmosphere.** In a paper written for delivery at the Third Canadian Conference on Nuclear Waste Management in September, he estimates that recycling the nuclear waste from Ontario’s reactors alone would power the entire province for 3,500 years at present consumption levels – again without any hydrocarbon emissions. An added point in favor of recycling, typically lost in discussions of nuclear fuel, is that not all radioactive **waste** comes from the production of energy or weapons. For over 40 years, Canada’s National Research Universal reactor at Chalk River, Quebec, has been producing the **isotope molybdenum 99** (Mo-99), which is **processed into so-called Tc-99 generators and** **used in hospital medical procedures world-wide**. By agreement with the US government, 23,000 liters of highly enriched uranium (HEU) **waste are currently slated to be sent down** the Eastern seaboard in as many as a hundred separate shipments over the next four years to a Savannah River, South Carolina facility. Once there, **it will be chemically treated, with the radioactive residue encapsulated in glass and held until it can again be transported to more permanent storage**. But physicist John Hilborn, inventor of the SLOWPOKE reactor and a researcher at Chalk River since the 1950s, believes **the HEU could instead be converted onsite to low enriched uranium (LEU). This would result in a six-fold gain in production, supplying** all of North America **with Tc-99 generators [medicine]** for 30 years – and effectively using up the radioactive material without ever having to move it down through the US. Public safety alone would suggest recycling the uranium and keeping it in the Chalk River inventory. One might think **environmental groups would be thrilled** at the prospect of depleting reactor fuel onsite, but many seem so obsessed with ending nuclear power that they would risk transporting and storing spent fuel in order to accelerate plant closings. **The welfare of humanity is best served by recycling industrial waste**, they say, except when it comes to the radioactive kind … in which case it should be shipped long distances to where it will take hundreds of thousands of years to decay, hopefully undisturbed by earthquakes or ground water. Even utility company officials find the current waste storage strategy politically preferable to lobbying for a superior alternative they know green activists will mercilessly demagogue. However nonsensical it is to bury an energy source that could safely and productively be depleted onsite, at least it is settled government policy in an era when it takes over a decade to license and build a power plant. The big losers in refusing to consider the recycling of reactor waste are future generations who, if current policy stands, will pay a high price for today’s nuclear ignorance and paranoia.

#### The plan does nothing about currently existing waste – only nuclear power can eliminate the impacts of waste already put out by plants.

# 2N

## Solvency

### AT Can’t solve – d

### on’t have the tech OR not in US

#### False – recent stats – taste it, Buckner 16’

Buckner, Melvin R., and William E. Burchill. "The case for nuclear fuel recycling." Nuclear News (2016).

**Three** commercial **facilities** using aqueous **reprocessing technology have been built in the United States**: the Nuclear Fuel Services (NFS) facility located near West Valley, N.Y.; the General Electric Midwest Fuel Recovery Plant at Morris, Ill.; and the Allied General Nuclear Services plant at Barnwell, S.C. [10] The NFS facility was the first and only private plant in the United States to reprocess UNF, operating commercially from 1966 to 1972 using the PUREX process. [3] The two other commercial reprocessing facilities were built but never operated. Since 1972, no commercial reprocessing has been done in the United States, while **other countries have gained extensive experience with industrial-scale reprocessing operations. Worldwide experience with reprocessing UNF from both thermal reactors and fast reactors in research/pilot/demonstration** and commercial facilities is summarized in Table I. [11] It is notable that **France, the United Kingdom, and Russia have reprocessed not only domestic UNF but also UNF from other countries**. France has reprocessed UNF from Japan, Germany, Switzerland, Belgium, Italy, Spain, and the Netherlands; it is **currently reprocessing** UNF from Italy and the Netherlands. The United Kingdom has reprocessed UNF from Japan, Germany, Switzerland, Belgium, Italy, the Netherlands, Sweden, and Canada, and Russia has reprocessed UNF from Ukraine. France has made a firm commitment to continue reprocessing UNF from commercial thermal reactors. China, Japan, and India have announced plans to establish reprocessing of UNF from com-mercial thermal reactors. **South Korea and Taiwan have expressed their desire to reprocess UNF from commercial reactors in the future**, but both are currently prohibited from doing so by their nuclear trade agreements with the United States. Belgium and Switzerland are currently considering the option of resuming reprocessing by a foreign supplier. The International Atomic Energy Agency publishes periodic reports on the world’s current and planned reprocessing capacity. [8,10] Pyroprocessing of UNF is based on a mature electrochemical technology used extensively in the metal refining industry. It has been demonstrated with UNF on a pilot scale in several countries, including the United States, and is generally considered well suited for accommodating metal fuel from fast reactors. Advanced fast reactor fuels may be metal alloys, oxides, carbides, or nitrides. Pyroprocessing, however, has not yet been deployed on a commercial scale anywhere in the world for the reprocessing of UNF from either thermal or fast reactors.

## Net benefits

### Laundry List

#### CP solves prolif, waste, jobs, etc, Buckner 16’

Buckner, Melvin R., and William E. Burchill. "The case for nuclear fuel recycling." Nuclear News (2016).

Beginning the transition toward **reprocessing** and recycling now **will facilitate** the options listed in the previous paragraph to be considered for this growth and will provide the following **benefits: 1. A national energy policy and legal framework** that support a comprehensive and sustainable program for the U.S. nuclear fuel cycle **would stimulate private investment.** [41] **2. Knowledge and operational experience from pilot reprocessing and recycling programs, mostly conducted by the national laboratories, would avoid becoming completely dependent on foreign experience. 3. Transition to reprocessing and recycling would provide “a place at the table” for discussions of U.S. nonproliferation goals and would significantly improve U.S. relations with other countries in the context of nuclear trade agreements. 4. Limitations on the storage of UNF at commercial reactor sites would be relieved by the transporting of UNF to a recycle plant**, described earlier (under the subhead “MOX fuel fabrication”). **5. The volume of nuclear waste** that must ultimately be disposed of in a geologic repository **would be** significantly **reduced.** This would reduce the required size of a repository and could obviate the need for additional repositories. **6**. An ongoing recycle program would reinvigorate important educational programs in radiochemistry and radiochemical separations. 7. **Thousands of new U.S. jobs would be created.**